Alcatel-Lucent Broadband 700 MHz Solution for Public Safety

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Enhanced Communications for Mission-Critical Needs

Overview

Offering transmission rates up to 3.1 Mb/s, the Alcatel-Lucent Broadband 700 MHz solution represents a quantum leap in first responder communication. It uses CDMA2000® 1xEV-DO Revision A technology to supplement existing LMR (Land Mobile Radio) networks by supporting a wide range of advanced multimedia services, such as streaming video, multimedia messaging, web access and backup push-to-talk service. Access to high speed data allows first responders to have a virtual "desktop in the field" and enhance communications among first responders in the field and remote emergency response coordinators. This accurate, up-to-date information can help save lives and minimize additional risks to the public. Because CDMA is a standardized, widely available commercial technology, the solution leverages the economies of scale of existing 3G networks and allows full interoperability between public safety broadband and commercial 3G wireless networks. As commercial CDMA networks evolve to 4G, the Alcatel-Lucent Broadband 700 MHz solution will be capable of implementing the same improved capabilities.

Going Beyond Narrowband Limits — To Meet Public Safety Needs

Broadband CDMA solutions supplement and enhance land mobile radio (LMR) networks with advanced multimedia capabilities. Arming first responders with advanced multimedia services allows them instant access to mission-critical data, giving local, state and even federal agencies the ability to exchange information across jurisdictional boundaries.

Wide area public safety wireless communications today use LMR technologies such as P25. Because of the small size of the radio channels used by these technologies, these networks are unable to support data-intensive applications such as video, e-mail with attachments and web access to agency databases.

The urgent need for effective, capable, interoperable emergency response services has been powerfully demonstrated in recent major disasters, such as Hurricane Katrina and the destruction of the World Trade Center towers on September 11, 2001. Today, organizations responsible for public safety and security must be prepared to meet escalating challenges at the local, state and federal level, while operating within tight budgets.

Constraints of existing public safety networks

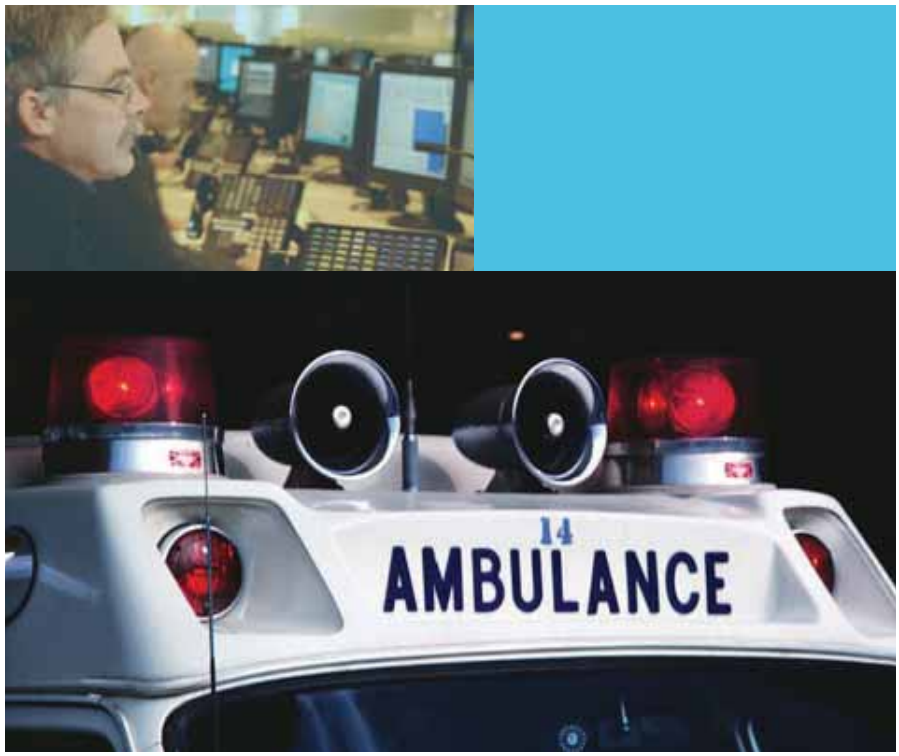
The wireless technology that currently supports public safety significantly lags behind commercial developments. Land mobile radio technologies support primarily:

- Push-to-talk group voice
- Textual applications such as text-based messaging

Proprietary land mobile radio solutions and weak standards significantly impede voice interoperability.

Innovative Capabilities that Leverage Existing Land Mobile Radio Transmission Towers

The Alcatel-Lucent Broadband 700 MHz solution represents a quantum leap in first responder communication. Based on open-standard, commercial CDMA2000® 1xEV-DO Revision A (EV-DO Rev A) broadband technology, the Alcatel-Lucent solution provides transmission rates up to 3.1 Mb/s and coverage radius of 18 miles per site and higher. This performance dramatically exceeds the limited-range public safety solutions deployed in the 4.9 GHz public safety band, which typically have a range of 300 yards or less. Broadband technology is deployed as an overlay to existing LMR networks. Because of the long ranges achieved by the technology, existing LMR transmission towers can be reused, eliminating the high costs associated with new tower construction.



Delivering cutting-edge data and multimedia capabilities enables key personnel to communicate faster and more effectively in emergency situations, no matter where they're located. First responders and the emergency command center can stay in constant communication, providing everyone with accurate, up-to-date information that helps save lives and minimizes additional risks to the public — and to emergency workers.

Fast, easy communication across jurisdictions and systems

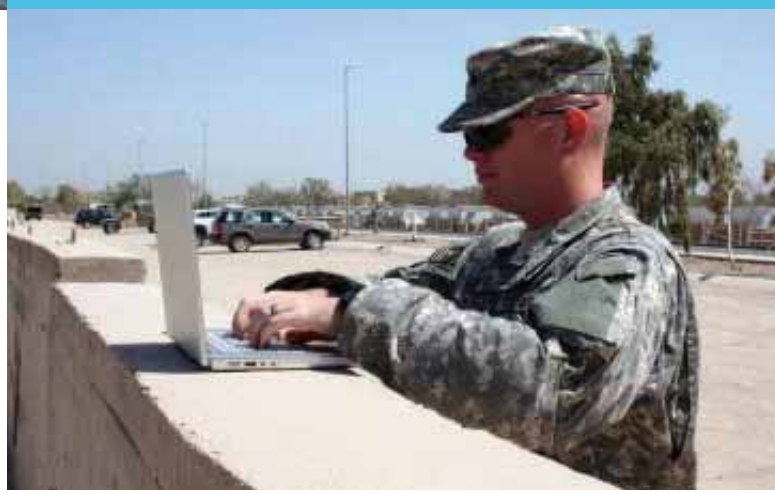
In times of emergency, the ability to communicate seamlessly with all key resources is critical. The Alcatel-Lucent solution offers a unified communications infrastructure that can be shared across cooperating public safety agencies, while leveraging existing investment in public safety radio infrastructure and training. Because CDMA technology uses standardized protocols and interfaces, users beyond the range of their home public safety network can still maintain a connection via a local 700 MHz or a commercial wireless network — streamlining connections in times of crisis.

In addition, the Alcatel-Lucent solution enables rapid deployment of additional capacity on portable platforms, such as a command center, as needed, when fixed infrastructure is not available to handle an emergency.

More powerful information tools

By using CDMA technology, the Alcatel-Lucent solution can support a growing spectrum of advanced communication capabilities that create a "desktop in the field" — and enhance day-to-day, task force and mutual-aid response. These voice, video, text and data capabilities include:

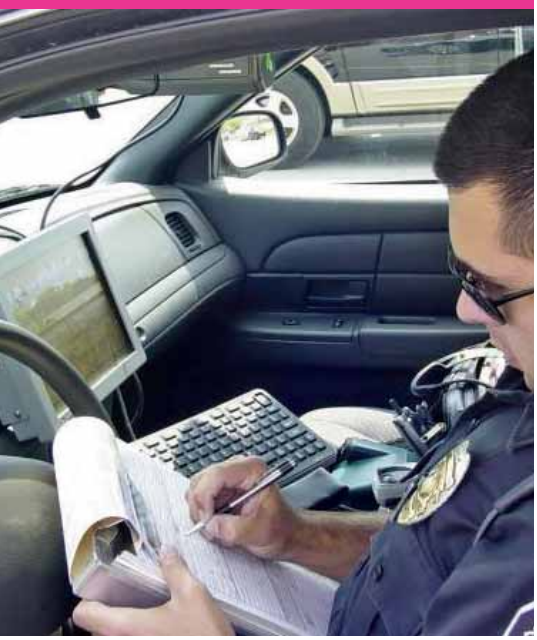
- Streaming video (surveillance, remote monitoring)
- Broadcast (multicast) audio or video sent simultaneously to multiple handsets
- Digital imaging
- Automatic vehicle location
- Computer-aided dispatching
- E-mail
- Mapping/GIS (geographic information system)
- Remote database access
- Text messaging
- Telemetry/remote diagnostics
- Push-to-talk with fast call set-up
- Web access
- Voice over IP, including interoperability with legacy and new LMR infrastructure through the use of gateways



Increased operating efficiency

Broadband EV-DO Rev A offloads legacy narrowband or wideband wireless data technologies and enhances them by delivering the following benefits:

- Decreased narrowband channel load: Time-consuming tasks, such as database lookups and dispatch messaging are off-loaded to broadband spectrum
- Enhanced day-to-day operations: Remote access to databases to streamline routine tasks and decreases paperwork
- Enhanced incident operations: Mission-critical information exchanged in real-time — anytime, anywhere — including floor plans, mug shots, incident stills, surveillance feeds and on-scene video
- Enhanced Task Force Operation: Simplified secure sharing of voice, video, and multimedia data among task force members.



Economy of scale, wider choices

The EV-DO Rev A broadband technology used in the Alcatel-Lucent solution is a high-volume, open-standard commercial technology used by major service providers worldwide. As a result of wide-ranging competitive activity, using a mainstream mobile technology can often deliver a growing range of new capabilities, more cost effectively. Leveraging the economies of scale the commercial networks offer helps drive down expenses for network elements, mobile devices and development of innovative features. Wide deployment also encourages ongoing product support — and helps maintain a commitment to the open standards that allow interoperability. For first responders, these benefits include:

- High-performance capabilities resulting from billions of dollars in R&D investment for the commercial market
- Vendor competition that enhances innovation
- Highly diverse selection of user devices.
- Roaming on commercial networks with a common device
- Forward/backward compatibility as commercial technology evolves to 4G.

KEY BENEFITS

FEATURE	BENEFIT
CDMA2000® 1xEV-DO Revision A (EV-DO Rev A) technology	Expanded multimedia capabilities that increase the effectiveness of public safety efforts
Standardized protocols and interfaces	Full interoperability between legacy public safety radio and commercial wireless technologies
Special public safety features that authorize/prioritize communication	Enhanced inter-agency cooperation — with controls that ensure mission-critical data gets top priority
Transmission speeds up to 3.1 Mb/s	Faster downloads of mug shots, floor plans, on-screen video and other critical data
Support for location and presence information	Significantly enhanced information about responders in the field
Base station routers with flat IP architecture	Technical efficiency, with fewer bottleneck nodes as traffic is offloaded, and cost savings
Low latency	Higher performance for voice and video applications
Backhaul data network with T1, microwave or Ethernet connectivity options	Efficient, cost-effective backhaul
Comprehensive OA&M platform	Enhanced performance with reduced costs
Full element management subsystem	Streamlined management

The Alcatel-Lucent Advantage

Knowing that public safety is a public trust, Alcatel-Lucent combines a solid understanding of public safety requirements with leadership in 3G technologies. The result is a powerful and cost-effective Broadband 700 MHz Public Safety solution that provides a unified infrastructure for cooperating public safety agencies — supporting advanced multimedia services that enhance the effectiveness of the public safety mission.

Designed for interoperability, scalability, and high reliability, the Alcatel-Lucent Broadband 700 MHz Solution for Public Safety delivers today's mission-critical applications, while allowing emergency management response teams to leverage the 700 MHz spectrum with advanced 3G broadband wireless solutions. These solutions will continue to evolve to planned next-generation (4G) capabilities, thereby protecting against the uncertainties of future network evolution.

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